

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

**Claims 1-7 (Cancelled)**

1                   **Claim 8 (currently amended):** An infrared ray lamp  
2                   comprising:  
3                   a heating element which is formed of a carbon-based  
4                   substance including at least crystallized carbon, a  
5                   resistance value adjustment substance and amorphous  
6                   carbon which has a substantially plate shape, the width  
7                   of which is larger than its thickness by five times or  
8                   more,  
9                   a glass tube in which said heating element is  
10                  hermetically sealed, and  
11                  an electrode embedded at both end portions of said  
12                  glass tube, electrically connected to both ends of said  
13                  heating element respectively and also electrically  
14                  connected to an external electric circuit,  
15                  a connection device which is secured to each end  
16                  portion of said heating element, thereby electrically  
17                  connected to said heating element, and  
18                  a lead wire having a spring portion which is secured  
19                  to said connecting device and said electrode and pulls

20       said heating element at a predetermined tension, and  
21       electrically connecting said connecting device and said  
22       electrode.

1           **Claim 9 (currently amended):** An infrared ray lamp in  
2       accordance with claim 8, wherein  
3           the spring portion of said lead wire is formed in a  
4           spiral shape, and  
5           said spring portion has a larger diameter than the  
6           width of said heating element further comprising:  
7           — a connection device secured to both end portions of  
8           said heating element respectively and electrically  
9           connected to said heating element, and  
10           — lead wires secured to said connection devices and  
11           said electrodes so as to pull both ends of said heating  
12           element at a predetermined tension and used to  
13           electrically connect said connection devices to said  
14           electrodes.

**Claim 10 (cancelled)**

1           **Claim 11 (original):** An infrared ray lamp in  
2       accordance with claim 8, wherein a reflection film for  
3       reflecting infrared rays is provided on the internal or  
4       external face of said glass tube so that the emission  
5       intensity of said infrared rays emitted from said heating

6 element has a predetermined distribution.

1           **Claim 12 (original):** An infrared ray lamp in  
2     accordance with claim 11, wherein said reflection film  
3     having a semicylindrical shape being substantially  
4     coaxial with the center line of said heating element in  
5     the longitudinal direction thereof is provided along  
6     substantially similar length as that of the infrared ray  
7     emitting portion of said heating element.

1           **Claim 13 (original):** An infrared ray lamp in  
2     accordance with claim 11, wherein the cross section of  
3     said reflection film has a shape formed of a part of a  
4     parabola having its focus substantially on the center  
5     line of said heating element in the longitudinal  
6     direction thereof, along substantially similar length as  
7     that of the infrared ray emitting portion of said heating  
8     element.

1           **Claim 14 (original):** An infrared ray lamp in  
2     accordance with claim 11, wherein the cross section of  
3     said reflection film has a shape formed of a part of an  
4     ellipse having one of its focuses substantially on the  
5     center line of said heating element in the longitudinal  
6     direction thereof, along substantially similar length as  
7     that of the infrared ray emitting portion of said heating

8 element.

1           **Claim 15 (original):** An infrared ray lamp in  
2     accordance with claim 12, wherein the central portion of  
3     the cross section of said reflection film is disposed so  
4     as to be opposed to the wider side portion of said  
5     heating element.

1           **Claim 16 (original):** An infrared ray lamp in  
2     accordance with claim 12, wherein the central portion of  
3     the cross section of said reflection film is disposed so  
4     as to be opposed to the narrower side portion of said  
5     heating element.

1           **Claim 17 (currently amended):** A heating apparatus  
2     provided with an infrared ray lamp comprising:  
3           a heating element which is formed of a carbon-based  
4     substance including at least crystallized carbon, a  
5     resistance value adjustment substance and amorphous  
6     carbon, and which has a substantially plate shape, the  
7     width of which is larger than its thickness by five times  
8     or more,

9           a glass tube in which said heating element is  
10    hermetically sealed, and

11           an electrode embedded at both end portions of said  
12    glass tube, electrically connected to both ends of said

13       heating element respectively and also electrically  
14       connected to an external electric circuit,  
15               a connection device which is secured to each end  
16       portion of said heating element, thereby electrically  
17       connected to said heating element, and  
18               a lead wire having a spring portion which is secured  
19       to said connecting device and said electrode and pulls  
20       said heating element at a predetermined tension, and  
21       electrically connecting said connecting device and said  
22       electrode.

1               **Claim 18 (currently amended):** A heating apparatus in  
2       accordance with claim 17, wherein  
3               the spring portion of said lead wire is formed in a  
4       spiral shape, and  
5               said spring portion has a larger diameter than the  
6       width of said heating element  
7               said infrared ray lamp further comprises:  
8               a connection device secured to both end portions of  
9       said heating element respectively and  
10       electrically connected to said heating element, and  
11               lead wires secured to said connection devices and  
12       said electrodes so as to pull both ends of said heating  
13       element at a predetermined tension and used to  
14       electrically connect said connection devices to said  
15       electrodes.

1           **Claim 19 (original):** A heating apparatus in  
2       accordance with claim 17 or 18, further comprising a  
3       reflection plate for reflecting infrared rays so that the  
4       intensity of said infrared rays emitted from said  
5       heating element has a predetermined directional  
6       distribution.

1           **Claim 20 (currently amended):** A heating apparatus in  
2       accordance with claim [[18]] 19, wherein said reflection  
3       plate has a semi-cylindrical shape being substantially  
4       coaxial with the center axis of said infrared ray lamp.

1           **Claim 21 (currently amended):** A heating apparatus  
2       in accordance with claim [[18]] 19, wherein the cross  
3       section of said reflection plate has a shape formed of a  
4       part of a parabola having its focus substantially on the  
5       center axis of said infrared ray lamp.

1           **Claim 22 (currently amended):** A heating apparatus  
2       in accordance with claim [[18]] 19, wherein the cross  
3       section of said reflection plate has a shape formed of a  
4       part of an ellipse having one of its focuses  
5       substantially on the center axis of said infrared ray  
6       lamp.

1           **Claim 23 (original):** A heating apparatus in  
2       accordance with claim 19, wherein the central portion of  
3       the cross section of said reflection plate is disposed so  
4       as to be opposed to the wider side portion of said  
5       heating element.

1           **Claim 24 (original):** A heating apparatus in  
2       accordance with claim 19, wherein the central portion of  
3       the cross section of said reflection plate is disposed so  
4       as to be opposed to the narrower side portion of said  
5       heating element.

1           **Claim 25 (currently amended):** A method of producing  
2       an infrared ray lamp, comprising:

3           a step of forming a heating element which is formed  
4           of a carbon-based substance including at least  
5           crystallized carbon, a resistance value adjustment  
6           substance and amorphous carbon into a substantially plate  
7           shape, the width of which is larger than its thickness by  
8           five times or more,

9           a step of disposing a lead wire having a spring  
10          portion which pulls said heating element at a  
11          predetermined tension,

12          a step of forming a glass tube by forming glass into  
13          a substantially cylindrical shape,

14          a step of hermetically sealing a substantially plate

15       said heating element, the width of which is larger than  
16       its thickness by five times or more, inside said glass  
17       tube so that the center line of said heating element in  
18       the longitudinal direction thereof is substantially  
19       coaxial with the center axis of said glass tube, and  
20            a step of forming a reflection film for reflecting  
21       infrared rays into a substantially semi-cylindrical shape  
22       on the external face of the cylindrical shape of said  
23       glass tube so as to substantially include the range of  
24       the disposition of said heating element in the axial  
25       direction thereof.

1           **Claim 26 (currently amended):** A method of producing  
2       an infrared ray lamp, comprising:

3           a step of forming a heating element which is formed  
4       of a carbon-based substance including at least  
5       crystallized carbon, a resistance value adjustment  
6       substance and amorphous carbon into a substantially plate  
7       shape, the width of which is larger than its thickness by  
8       five times or more,

9           a step of forming a glass tube by forming glass into  
10       a substantially cylindrical shape,

11           a step of forming a reflection film for reflecting  
12       infrared rays into a predetermined substantially  
13       semi-cylindrical shape on the external face or the  
14       internal face of the cylindrical shape of said glass

15        tube, and

16                a step of disposing a lead wire having a spring

17                portion which pulls said heating element at a

18                predetermined tension, and

19                ~~a step of disposing a substantially plate said~~

20                ~~heating element, the width of which is larger than its~~

21                ~~thickness by five times or more, so as to be included in~~

22                ~~the axial range wherein said reflection film is disposed,~~

23                ~~and of hermetically sealing said heating element inside~~

24                ~~said glass tube.~~

1                **Claim 27 (currently amended):** An infrared ray lamp  
2                comprising:

3                a heating element having a substantially plate  
4                shape, the width of which is larger than its thickness by  
5                five times or more, and being formed of a carbon-based  
6                substance including at least crystallized carbon, a  
7                resistance value adjustment substance and amorphous  
8                carbon,

9                a heat emitting block ~~which is formed of a~~  
10               ~~conductive material and electrically connected to one end~~  
11               ~~having a good conductivity which is bonded to each end~~  
12               portion of said heating element,

13               an internal lead wire having a close-contact portion  
14               wound around said heat-emitting block and a spring  
15               portion,

16           a glass tube in which said heating element, said  
17        heat emitting block, said close-contact portion, and said  
18        spring portion is hermetically sealed, and  
19           an electrode embedded at both end portions of said  
20        glass tube, electrically connected to ~~both ends of said~~  
21        heating element said inner lead wire respectively and  
22        also electrically connected to an external electric  
23        circuit.

1           **Claim 28 (previously presented):** A heating apparatus  
2        provided with an infrared ray lamp comprising,  
3           a heating element having a substantially plate  
4        shape, the width of which is larger than its thickness by  
5        five times or more, and being formed of a carbon-based  
6        substance including at least crystallized carbon, a  
7        resistance value adjustment substance and amorphous  
8        carbon,

9           a heat emitting block ~~which is formed of conductive~~  
10       ~~material and electrically connected to one end of having~~  
11       a good conductivity which is bonded to each end portion  
12       of said heating element,

13       an internal lead wire having a close-contact portion  
14       wound around said heat-emitting block and a spring  
15       portion,

16           a glass tube in which said heating element, said  
17        heat emitting block, said close-contact portion, and said

18        spring portion is hermetically sealed, and  
19            an electrode embedded at both end portions of said  
20        glass tube, electrically connected to ~~both ends of said~~  
21        ~~heating element~~ said inner lead wire respectively and  
22        also electrically connected to an external electric  
23        circuit.

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**Amendments to the Drawings:**

The attached sheet of drawings includes changes to Figs. 9, 11, 12, 14, 15, 17, 20, 24 and 26.

Each drawing has been amended to include appropriate figure labels (Fig. 9(a), Fig. 9(b) etc.).

Figs. 20-26 have been labeled "Prior Art".

Attachment: Replacement Sheet (13 sheets)

Annotated Sheet Showing Changes (13 sheets)